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Japan's New Large-scale Research Centers Programs

This report highlights two new research centers programs supported by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) starting in JFY2007 (April 2007-March 2008): "World Premier International Research Center Initiative" and "Global COE Program."

World Premier International Research Center Initiative (WPI)

WPI expects to support about five world-top class research centers in Japan at a level of Yen 500 million-2 billion (\$4-17 million @ Yen 118/\$) per center per year for 10 (and possibly 15) years. The total budget for WPI in JFY2007 is Yen 3.5 billion (~\$30

million), which will support selected centers for their first six months starting in October 2007.

Quoting from WPI materials on the MEXT website, "...It is the aim of the WPI Initiative to establish research centers of a caliber that will win high esteem throughout the world for the outstanding results they produce. ... These research centers should be capable of attracting frontline researchers from around the world and of advancing research that integrates cutting-edge fields while pioneering new domains of scientific pursuit. Doing so will require the realization of high level of research, done by physical assembly of outstanding researchers over a critical mass, and an excellent research environment. The WPI Initiative will provide financial support for measures aimed at realizing such a research environment free of conventional systemic constraints and achieving a critical mass of outstanding researchers in fields in which Japan's expertise excels. In this sense, it should be understood that this program is of a completely different nature from the usual funding programs operated mainly to provide support for research projects."

WPI centers will be expected to have 200 or more staff, including researchers, research assistants, and administrative staff. Among a center's researchers, 10-20 of them should be "world-top level researchers," 10-20 percent should be "excellent foreign researchers," and 30 percent or more (including short-term fellows) should be "foreign researchers." Postdocs will be recruited by international solicitation. The working language at WPI centers will be English, and both researchers and administrative staff should have English language capability. Because of the administrative infrastructure provided by the center, WPI researchers will not be expected to perform non-research work.

Universities, inter-university institutions, independent administrative organizations, and public corporations can apply for WPI grants. The competition will be administered by the Japan Society for the Promotion of Science (JSPS). The deadline for proposals is in late May, and final selections are expected in early September. See http://www.mext.go.jp/b_menu/houdou/19/03/07032805.htm (note English pdf files).

Global COE Program (Global COE)

Global COE will support new academic research centers with start-ups over the next five years at a level of Yen 50-500 million (\$0.4-4.2 million) per center per year for five

years. The total budget for Global COE in JFY2007 is Yen 15.8 billion (~\$133 million), which will support approximately 60 new centers. Depending on future year budgets, MEXT expects to support an additional 60 new Global COE's in JFY2008, and 10 additional new centers each year in JFY2009, 2010 and 2011.

Because it follows after the "21st Century COE Program" that established a total of 272 research centers at 91 Japanese universities between 2002-2004, Global COE is being referred to as a "post 21st Century COE Program." Global COE places more importance on support for young researchers and on internationalization. Quoting from materials on the JSPS website, "The Global COE Program will provide funding support for establishing education and research centers that perform at the apex of global excellence to elevate the international competitiveness of the Japanese universities. The program will strengthen and enhance the education and research functions of graduate schools, to foster highly creative young researchers who will go on to become world leaders in their respective fields through experiencing and practicing research of the highest world standard."

Doctoral departments or programs in university graduate schools and research institutes attached to universities can apply for Global COE grants. The competition, which is administered by JSPS, has already received 281 applications, and JFY2007 grants are expected to be announced in May.

See <http://www.jsps.go.jp/english/e-globalcoe/index.html> for details.

WPI and Global COE in the Context of Science and Technology in Japan

Third S&T Basic Plan [<http://www8.cao.go.jp/cstp/english/basic/3rd-Basic-Plan-rev.pdf>]

One of the pillars of Japan's Third Science and Technology Basic Plan (2006-2010) is to "reform S&T systems," including (1) providing more opportunities for young researchers to conduct independent research, (2) attracting foreign researchers to work in Japan, (3) making research environments more competitive, and (4) fostering personnel in science and technology so they can excel in diverse fields. The following is an excerpt from the Plan's section on "Enhancing the Competitive Edge of Universities:"

"Creating universities that lead the world's S&T: Universities with global

competitiveness cannot be created without sound competition between universities. For this reason, the government will further promote the development of a competitive environment, and the improvement of the mobility of human resources in universities, be it national, public or private. Furthermore, in order to actively develop the creation of universities that rival other universities in the world, and lead the world's S&T, it will promote the further enhancement of intensive investment under the principle of competition for organizations aiming to become the world's top class research and education centers.

The 21st Century COE Program is currently being developed as a part of structural reforms of universities through national, public and private universities, but it is fitting to plan for further development in a more full and evolved way by implementing a stricter selection of focus based on the evaluation and validation of the program. In so doing, it is important to secure perspectives such as the revitalization of the development functions of talented researchers, and the improvement of the basic research standards, as the primary mission of universities. As such, it is appropriate to establish a wide range of disciplines as the scope and maintain the basic concept from the perspective of securing the diversity of fundamental research, and creating new areas, rather than placing a disproportionate emphasis on specific research areas.

While developing measures for securing the diversity of such fundamental research, in creating innovation, intensive investment for creating research and education centers must be secured by focusing on specific advanced research areas, while obtaining the cooperation of the business world from the perspective of creating research areas that may lead the world. Doing so will be extremely effective.

It is expected that these initiatives will create about 30 research centers that will be positioned as the world's top-class centers according to various evaluation indexes on research activities, i.e., centers of world's top-20 in the field thesis citation index .”
(end of excerpt)

Operational Funds at National University Corporations

As part of a series of broad government reforms, in April 2004, Japan's national universities became independent entities known as national university corporations (currently 87 in number). Prior to 2004, there was a government account used solely

for the support of national universities. That account was abolished when universities were given independent status. Instead, MEXT began to provide support to universities under the name of “operational funds,” which includes various amounts for salaries, facilities management, research, and other costs. Concurrent with their change of status, MEXT informed the universities that government supported operational funds would be decreased by about one percent per year from 2004-2011 (actual percentages were 0.8 percent in 2005 and 2006, and 1.4 percent in 2007). More recently, the Ministry of Finance has begun to review the complicated formulas used for allocating operational funds to national university corporations. Whereas funds are currently allocated as a function of numbers of students and teachers, and other such factors, there is a proposal before the Council for Economic and Fiscal Policy that allocations be based on each university’s efforts and results in the areas of research and education. (How to measure such is still under discussion.)

With an overall decline in operational funds, universities will likely increase their efforts to obtain outside funding, including from competitive government research grant programs. Moreover, if the amount of operational funds a university receives becomes tied to research and education results, competition will be further intensified. To put this in context, the JFY2007 budget for university operational funds is Yen 1,204 billion (~\$10 billion) – and decreasing, and the JFY2005 (latest year available) Government of Japan total competitive research funds was Yen 467 billion (~\$4 billion) – and increasing.

Declining Number of 18-year Olds

In Japan, the number of 18-year olds, and therefore the number of university applicants, is declining. In the latest recruitment season (April 2007), the total number of 18-year olds approximately equaled the total number of new students that universities (national, public and private) could accept. Because of this, many Japanese universities, including even the prestigious University of Tokyo, now actively engage in a variety of recruiting activities. Severe competition for students has resulted in one private university going bankrupt, and has also been a factor over the last few years in the merger of 35 national, public and private universities into 14 institutions. Winning a WPI or Global COE grant may give a university a competitive edge in attracting more science and engineering students.

Internationalization of Japanese Universities

The JSPS-administered program of Strategic Funds for Establishing International Headquarters in Universities (SIH) was established in 2005 to provide grants of Yen 10-40 million (\$85,000-424,000) per university per year for five years to enable university-wide organizational, international activities (see http://www.u-kokusen.jp/index_e.html). For JFY2007, JSPS is starting the International Training Program (ITP), which will provide university grantees with Yen 20 million (\$170,000) per year for five years to support international research experiences for Japanese students (see <http://www.jsps.go.jp/j-ity/index.html> - in Japanese).

Reform of Graduate Education

[<http://www.jsps.go.jp/j-initiative/index.html>] [<http://www.jsps.go.jp/j-daigakuin/index.html>]

JSPS launched Initiatives for “Attractive Education in Graduate Universities” in 2005 for two years, and as a result, 143 programs received grants during 2005-2006. The grant amount was up to Yen 50 million (\$424,000) per program. Following this, in 2007 JSPS launched a program named “Support Program for Improving Graduate School Education. It is to select graduate universities that have excellent programs to foster young researchers, and to provide up to Yen 50 million (\$424,000) to about 120 graduate universities for three years. The total budget for this program for JFY2007 is Yen 35 billion (\$30 million) and it is not yet decided whether this program will be continued next year.

Innovation 25 [http://www.kantei.go.jp/foreign/innovation/index_e.html]

This is an initiative launched by the Cabinet Office and chaired by the Minister of State for both Science and Technology Policy, and Innovation to establish milestones of innovation toward the year 2025. Its interim report released at the end of February 2007 says that “university reform,” “expansion of S&T investment,” and “investment in the next generation” are among the items whose concrete measures urgently need to be established.

Conclusions

Formula-based funding to Japanese universities is declining, while competitive funds are increasing. There will undoubtedly be winners and losers. Japanese institutions that are already nationally competitive should be well-positioned to use the WPI and

Global COE programs to strengthen their international positions. The new centers will likely focus on research areas that Japan already excels at, and with the large infusion of additional resources, should be excellent candidates for U.S. institutions looking for international partners for science and engineering research education.

The Council for Rebuilding the Education (CEFP), Council for Science and Technology Policy (CSTP), Innovation 25, Asia Gateway Strategy Scheme, and the Council for Regulatory Reform are all putting forward ideas for drastic reforms of Japan's higher education. Discussion results will be compiled into a national policy report at the end of May 2007, and the NSF Tokyo Office will report on this.